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**REPORT ON THE 1993
COTTAGE POLLUTION
CONTROL PROGRAM**

MUSKOKA-HALIBURTON

NOVEMBER 1994



**Ministry of
Environment
and Energy**

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COTTAGE POLLUTION CONTROL PROGRAM
MUSKOKA-HALIBURTON**

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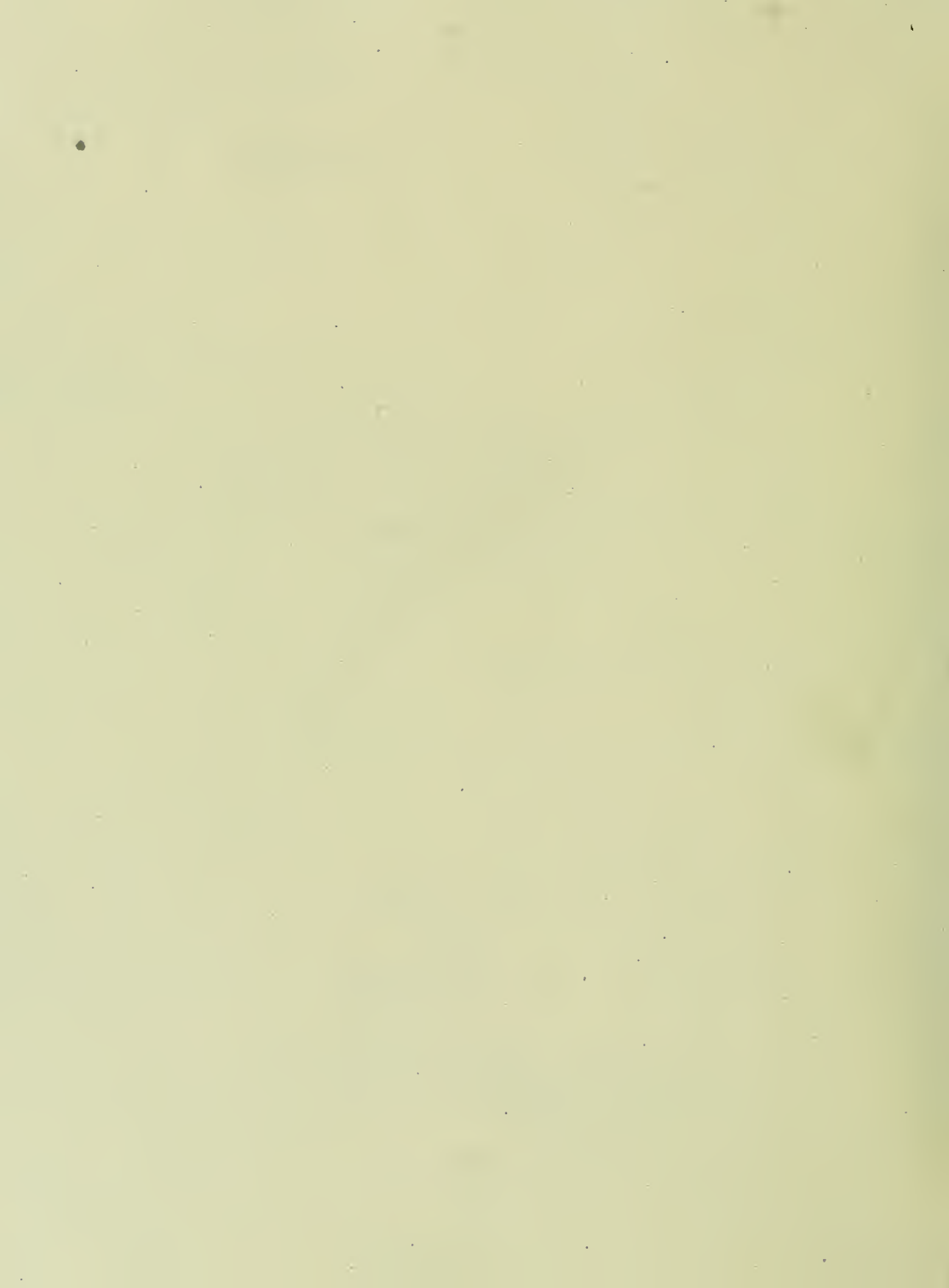


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FOREWORD

The data included in this report were compiled and prepared by staff of the Ministry of Environment and Energy, Operations Division.

The Cottage Pollution Control Program utilizes funding from the Operations Division of the Ministry of Environment and Energy as well as from the Environmental Youth Corps to undertake reinspections of private sewage systems under Part VIII of the Environmental Protection Act (R.S.O. 1990) and Regulation 358.

PREFACE

Brief History

The Cottage Pollution Control Program was initiated in 1970 through the Operations Division of the ministry to enforce regulations, control discharges and to undertake abatement initiatives with respect to cottage waste disposal systems.

The Cottage Pollution Control Program is authorized under Part VIII of the Environmental Protection Act which deals with measures aimed at the control and maintenance of sewage systems.

Effects of Sewage Pollution

There are two principal effects of sewage pollution which are of concern to the Ministry of Environment and Energy. The first effect is the impact that nutrient enriched waste water will have on the ecosystem. The second effect is the impact that polluted water

will have on the health of humans. Each effect is important and can cause significant problems if measures are not taken to limit the contaminant source.



Figure 1 The natural environment

Sewage as it is defined in Regulation 358 is "waste of domestic origin which is human body waste, toilet or other bathroom waste, waste from other showers and tubs, liquid or water borne culinary and sink waste or laundry waste".

Aquatic Species and Nutrient Loading

The ecological balance of nature is very sensitive and is very easily altered by man. The Ministry of Environment and Energy is charged with the responsibility to ensure that the "surface waters of the Province are of a quality which is satisfactory for aquatic life and recreation".

Specific groups of aquatic life such as lake trout require an environment which is cool and which has high concentrations of dissolved oxygen.

During the spring months lake waters are generally well mixed and cool. However, during the warm summer months as the water is heated from the surface down, a layer of cooler water

accumulates at the bottom of the lake with enough dissolved oxygen to sustain lake trout. During this unmixed period, the bottom water receives no oxygen from the atmosphere and species must rely on the existing supply.

As long as the amount of oxygen remains relatively stable the species can survive.

Valuable oxygen is used up when algae, which grow well in warmer waters, die and sink to the bottom of the lake. The dead algae, in addition to other dead aquatic plants, are then broken down by bacteria which require oxygen necessary for the survival of the lake trout. If too much oxygen is consumed, trout and other species of aquatic life dependent upon higher levels of dissolved oxygen may die off.

A natural oxygen balance has been maintained for thousands of years and trout have been able to survive. Problems begin when excessive fertilizing nutrients are introduced

into the lake by man.

The amount of algae in a given lake is dependent upon the amount of fertilizing nutrients introduced from natural sources such as inlet streams and rivers, precipitation and surface run-off. This natural amount of nutrient enrichment can be significantly increased by shoreline development.

As a lakeshore becomes occupied by more and more cottagers and recreational developments, the natural environment of the shoreline is altered.

Subsurface sewage disposal systems add phosphorus and other nutrients to the soil. These loadings are eventually carried to the lake and contribute to the growth of aquatic plants and algae.

Some cottagers also plant grass and use fertilizers to enhance its growth. These fertilizers often make their way to the water and will feed the algae.

The Cottage Pollution Control Program attempts to control increased loadings of nutrients into the surface waters by working towards minimizing nutrient loadings from shoreline sewage systems.

Health and Safety

The Environmental Protection Act is specifically designed not only to protect the natural environment, but to ensure that the environment will provide healthy and safe living conditions for the benefit of all human beings.

Lakes and rivers offer a cottager an aesthetically pleasing environment in which to recreate and relax. However, the appearance of a clean environment may be misleading if one does not acknowledge and control microscopic problems which may potentially bring an enjoyable vacation to an uncomfortable end.

All surface water is open to potential contamination

by humans, animals and birds, all of which can be carriers of disease.

Bacteria may be excreted into water bodies from the intestines of warm-blooded animals. Some of these bacteria may be pathogenic in nature causing disease. The existence of specific types of bacteria, also called indicator organisms, is also used to indicate whether viruses may be present in the water. To determine whether water is safe for drinking or for specific types of recreational activity, water is tested for the presence of indicator organisms.

Indicator organisms include coliform, faecal coliform, faecal streptococci and clostridium perfringens. These organisms are naturally found in the intestines of humans and animals in large numbers.

Indicator organisms are mainly harmless but act as indicators of the potential existence of other intestinal organisms

which are capable of causing intestinal disease.

If such indicator organisms are detected in water samples, there is a likelihood that disease-causing bacteria or viruses are also present.

Improperly functioning sewage systems may allow disease-causing organisms and viruses to escape into the open environment. Sewage escaping into the open environment may eventually be carried to surface and ground water by precipitation and surface runoff.

Once in the water, many of the pathogenic bacteria and viruses may survive and affect the health of those individuals who recreate or use the water for drinking.

The Cottage Pollution Control Program investigates sewage systems to help ensure that such disease-carrying organisms are prevented from gaining access to the open environment and hence are prevented from

entering surface and
ground waters.



Figure 2 Sewage seeping out of a rusted septic tank

A NOTE CONCERNING SEPTIC SYSTEMS

Recent scientific research indicates that the most critical effluent components contributing to lake eutrophication are phosphorus and nitrogen. Eutrophication is the natural process of nutrient enrichment and the gradual infilling of a lake. In natural conditions, the filling in of a lake with sediments from surface water runoff and decaying plants may take thousands of years; however, this process is accelerated in its natural aging process because of human activity. Cottages located along the shores of lakes utilize sewage systems which contribute phosphorus and nutrients to the surface and ground water. Some soils that are used to filter sewage effluent in the immediate proximity and downgradient from the system, have a limited capacity to absorb and retain phosphorus and other nutrients.

Many cottagers believe

that phosphorus loading is principally a product of sink, tub and laundry wastes; however, tests indicate that the amount of phosphorus contained in foods consumed and, consequently, discharged into septic tanks exceeds the amount of phosphorus found in grey water even when non phosphorus detergents are used by the household. For example, in tests, conducted by Dr. M. Brandes, Ph.D., P.Eng., to compare chemical differences between grey water and black water in an environment where non phosphorus detergents were used; it was determined that grey water total phosphorus concentrations were between 0.8 - 3.2 mg/L with a mean of 1.4 mg/L while black water concentrations were between 16-22 mg/L with a mean of 18.6 mg/L.¹

The results of such tests help to clarify the common misperception that by simply eliminating phosphorus-based detergents the environment will be

protected and all other human body related wastes will naturally decompose leaving little to no impact on the environment.

Likewise, nitrogen contributes to the eutrophication of surface water and if found in excessive amounts in ground water, it can pose a health hazard. As long as the nitrogen is able to be filtered through the soil, it has a limited environmental impact because bacteria and plants can absorb it; however, if soil filtration does not occur, as a result of direct ground discharge or escape then eutrophication and contamination can occur. Septic tanks and plumbing which have eroded, rusted or cracked can allow such contaminates easy access to surface and ground water with help from seasonal rains and spring runoff.

A number of factors affecting the soil's ability to retain phosphorus and other nutrients have been determined. They include

the soil type, the quantity of phosphorus and nutrients entering the system, ground water fluctuations, the age of the system, and the volume of downgradient soil through which the sewage passes.

Owners are advised to follow septic system use and maintenance procedures to lessen the potential for lake eutrophication and ground water contamination. Such measures will also lengthen the life of the septic system.

USE AND MAINTENANCE PROCEDURES:

A. Older existing septic systems, whose soil has reached its capacity to absorb phosphorus and other nutrients, should be replaced with new subsurface systems sufficiently back and above both surface and ground waters. For most full size septic systems in cottage country, soil can reach its capacity in

anywhere from 5-20 years. This time frame will vary depending upon the type and quantity of soil.

B. Phosphate detergents should not be used.

C. Garburators should be discouraged.

D. Septic systems should not be used for disposal of paints, chemicals, solvents, or similar materials.

E. A pump-out of a proper sized septic tank should be carried out about every four or five years for seasonal cottage use, and more often with increased usage.

F. Frequent inspections should be made of all parts of the septic system to look for leaks, cracks, decay and corrosion. Such malfunctions should be corrected as soon as possible.

Adherence to these procedures will assist cottagers in maintaining

their septic systems and will assist in protecting a lake capable of meeting their future needs.

SUMMARY

GENERAL

This report details the activities and results of the 1993 Cottage Pollution Control Program. The program is responsible for the detection and correction of faulty private sewage disposal systems.

Survey crews were able to conduct inspections on 484 cottage establishments. Lakes (or parts of lakes) surveyed included: South Lake, Haliburton; Davis Lake, Haliburton; and Jack Lake, Peterborough.

Provincial Officers from the Ministry of Environment and Energy and the Peterborough District Health Unit were involved in the abatement of malfunctioning sewage systems.

Work is continuing to bring malfunctioning septic systems into compliance.

INTRODUCTION

GENERAL

Ontario's thousands of beautiful inland lakes provide an abundant resource for recreational enjoyment. To protect the quality of these waters, a delicate environmental balance must be maintained.

A heavy influx of people may subject a lake and its surrounding environment to great stress. Uncontrolled development and imprudent use of our recreational lakes may cause their deterioration and destroy their natural qualities.

The Ontario Ministry of Environment and Energy is attempting to bring some of these stress factors under control by instituting a variety of programs. One of these, the Cottage Pollution Control Program, was initiated in 1970 to study the cottage waste disposal problem, to evaluate existing waste disposal systems and to enforce repairs to those found to

be unsatisfactory.

Detection work is conducted by trained seasonal staff (students) who survey all the systems on selected lakes. The surveyed systems are evaluated by Environmental Officers. Systems found to be malfunctioning are checked by an Environmental Officer who negotiates an agreement with the owner for corrective work to be undertaken. The corrected system is

examined again to ensure compliance with the agreement and pertinent regulations.

PREPARATION

Choosing a Survey Site

Every year, the Ministry of Environment and Energy receives many requests from cottage associations to have their lakes surveyed.



Figure 3 Recreational use of our lakes

However, the ministry is only able to accommodate a limited number of surveys each season.

Therefore, a "Lake Request Rating Scale" has been developed to help establish priorities to undertake work on lakes which are in most immediate danger of environmental degradation.

Data are collected from the Ministry of Environment and Energy, cottage associations, and municipal organizations who are directly involved with the planning, use and maintenance of these various lakes.

Lakes are rated in respect to the amount of measurable water quality deterioration, the capacity to maintain an optimal aquatic habitat for specific species of fish, and by the density, age and rate of development on each lake.

Cottage association requests play an important role in these decisions

because their support is important for the success of the program. All lakes are reviewed and re-rated every year to ensure that priority lakes receive appropriate attention.

Program Staffing and Training

The District Supervisor with an Environmental Officer co-ordinates program undertakings and abatement initiatives throughout the year.

In addition to the full-time Environmental Officer, each spring students are hired from local secondary schools, colleges and universities to be trained in various aspects of the Cottage Pollution Control Program.

The two principal positions required for the survey include the cottage surveyor and the Environmental Officer.

These officers require more extensive training than the surveyors as they will assist in the

preparation of agreements with individual cottagers and when necessary the enforcement of the Environmental Protection Act (EPA) and Regulation 358.

Survey staff are trained to recognize and classify sewage systems. They are trained to a lesser extent in the other aspects of the program.

Further, all Cottage Pollution Control Program staff are given instruction in first aid and marine safety.

Cottage Pollution Control Survey

Detection Surveys

A number of crews, each composed of two surveyors, begin the survey of the lake by preparing a description log. Each building, called an establishment, is systematically numbered, accurately described and plotted onto a map to

facilitate the location of the premises at a future time by detection crews or abatement staff. When the description logs are completed, copies are made and distributed to each crew.

The detection teams visit each establishment on the lake. The owner or occupant is interviewed and the lot surveyed. Information collected includes the following: the type of building; the number of occupants; the type of use; the water supply and treatment; the sewage disposal methods and type; the location, size and set back of onsite sewage disposal systems; the type and depth of soil and physical evidence of any malfunctioning systems. All data collected are entered onto survey forms.

From this information, the performance of the systems are evaluated and the system for each establishment is given a preliminary performance classification. The classification is then

verified by the Abatement Officer.

Classification of Sewage Disposal Systems

The sewage disposal systems of all premises surveyed are classified into one of four groups.

The following classification categories have been changed and redefined from previous years' categories in order to simplify the classification process and to make the system more understandable to the general public.



Figure 4 Students surveying site

Class A - No Problems Detected

A sewage system which meets or approximates the current standards of good design, construction and location. There is no evidence of pollution or malfunction past or present and the system has been adequately maintained.

Class B - Potential Concerns

A sewage system which does not meet or approximate current standards of design, construction and location. Such a system has some form of defect which may cause the system to malfunction in the future causing either a public health nuisance or danger of pollution. These systems generally are performing satisfactorily at the time of inspection and there are no visual signs of malfunction.

An example of a sewage system that may be of concern would be a three-bedroom cottage utilizing a small steel 200-gallon oil drum for a septic tank and two short lines of clay tile for a tile field. As these types of systems are discovered, owners are advised by the ministry of the potential concern.

Class C - Faulty Sewage

A sewage system which causes or allows grey or black water from any part of the sewage disposal system to escape into, or to be exposed to, the natural environment. An example of such a faulty sewage system would be a steel septic tank which has rusted away allowing sewage to spill onto the ground surface. These systems require abatement action.

Class D - Direct Polluter

A sewage disposal system which directs, by means of its design or construction, sewage into ground or surface waters. An example of a direct polluter is a sewage system which is plumbed so that the sewage pipe empties into a nearby stream or lake.

ABATEMENT

General

As sewage systems are classified by the survey crews, abatement officers compare the survey results to the requirements found within the Environmental Protection Act and Regulation 358 to determine necessary corrective measures, if any.

Authorization

Full time and contract abatement officers are given authority by the Minister of Environment and Energy to act as official representatives of the Ontario Ministry of Environment and Energy.

This enables abatement officers to enter onto the properties of cottage owners, to make legally binding agreements, and when necessary to enforce the requirements of the law.

Procedure

Once a file is examined and the original classification is confirmed or altered, it is referred to an Environmental Abatement Officer if abatement of a problem is required.

The officer then interviews the owner to advise of the findings and to discuss corrective action. If the owner agrees with the findings, a corrective program is initiated.

The owner is asked to sign a "Pollution Abatement Report" which describes the problems found and the corrective measures required to be completed by a specific date.

A final inspection is carried out upon completion of the corrective work and the sewage disposal system file is appropriately reclassified. Occasionally, an owner does not comply with a

correction program and legal action must be initiated.

In the case of commercial establishments, this procedure is often more complex, requiring an engineering study and the submission of plans, including a soil analysis report, for approval.

Where a direct pollution problem exists, corrective action must be initiated immediately to prevent any further deterioration of water quality in the lake.

SOUTH LAKE SNOWDON TOWNSHIP COUNTY OF HALIBURTON

The 1991 Self Help report describes South Lake as having a surface area of 0.9 square kilometres, an average depth of 3.4 metres, and a maximum depth of 11.5 metres.

The lake receives inflow from a small unnamed creek and flows into the Burnt River through Kendrick Creek. South Lake lies in an area underlain by granite and other hard Precambrian rocks. The soils are generally shallow but thickness over the bedrock varies greatly over short distances. The shoreline of South Lake consists entirely of shallow till and rock ridges.

The degree of water clarity is moderate, as indicated by Secchi depths ranging from 3.5 metres to 4.5 metres. Chlorophyll *a* concentrations range from 1.8 to 7.9 ug/L and averaged 3.7 ug/L in 1991 indicating moderately high densities of suspended algae.

Based on these results, South Lake is moderately enriched with nutrients.

Detection Survey Results

Survey and abatement work were initiated on South Lake in late June. In total, 102 cottage sewage systems were inspected. Of these, 102 systems inspected, 45 required no further abatement or corrective action to bring them into compliance. A further 34 systems were found to be potential concerns. These are systems which do not meet basic regulatory requirements but showed no sign of malfunction at the time of the inspection. These owners have been contacted and made aware of the Ministry of Environment and Energy's specific concerns.

The remaining 23 systems inspected were found to be malfunctioning.

Summary of Abatement

Work was immediately initiated to bring the 23 malfunctioning sewage systems into compliance with the Environmental Protection Act. As of November, 1993, 17 of the 23 systems had been corrected with the remaining six systems expected to be corrected by the early summer of 1994.



MINISTRY OF THE ENVIRONMENT

SOUTH LAKE
COTTAGE POLLUTION
CONTROL PROGRAM

SCALE NOT TO SCALE

DRAWN BY M.S.S.

DATE DEC. 1993

CHECKED BY T.H.

DRAWING NO.

DAVIS LAKE LUTTERWORTH TOWNSHIP COUNTY OF HALIBURTON

The 1991 Self Help report describes Davis Lake as having a surface area of 0.9 square kilometres, an average depth of 11 metres, and a maximum depth of 30 metres. Bare rock ridges and shallow till constitute the physiography of the Davis Lake area. The lake receives inflow from three unnamed creeks and discharges via an unnamed creek to Crego Creek which leads to the Burnt River.

The lake is considered moderately enriched having moderate concentrations of nutrients, reflected by its algal growth and aquatic weeds. The lake is suitable for water-oriented recreational activities; however, there may be periodic algae blooms.

Detection and Survey Results

Survey and abatement work were initiated on Davis Lake in July. In total, 118 systems were inspected. Of the 118 systems inspected, 45 required no further abatement or corrective action.

A further 37 systems were found to be potential concerns. These are systems which do not meet basic regulatory requirements but at the time of inspection showed no sign of malfunction. These owners have been contacted to make them aware of the Ministry of Environment and Energy's specific concerns.

The remaining 36 sewage systems inspected were found to be malfunctioning.

Summary of Abatement

Work was immediately initiated to bring the 36

malfunctioning sewage systems into compliance with the Environmental Protection Act and its regulations. As of November 1993, 30 of the 36 systems had been corrected with the remaining six systems expected to be corrected by the early summer of 1994.



DAVIS LAKE

MINISTRY OF THE ENVIRONMENT

DAVIS LAKE
COTTAGE POLLUTION
CONTROL PROGRAM

SCALE NOT TO SCALE

DRAWN BY M.S.S.

DATE DEC. 1993

CHECKED BY T.H.

DRAWING NO.

JACK LAKE BURLEIGH AND METHEUN TOWNSHIPS PETERBOROUGH COUNTY

The Cottage Pollution Control Program continued its survey of Jack Lake in August 1993. In total, 264 sewage disposal systems were inspected.

The physiography of the lake basin is characterized by bare rocks and shallow soil. Jack Lake has a surface area of 1221.3 hectares with an average depth of 10 metres and a maximum depth of 42.7 metres.

Self Help data indicate that because Jack Lake is divided by numerous islands and narrows, different water quality characteristics and flow patterns exist. The lake receives its inflow from Redmond and Apsley Creeks and the lake subsequently flows southward into Stony Lake on the Trent River

system. Self Help data suggest the lake is moderately enriched to enriched, however, problems with sampling procedures have made accurate assessments of water quality difficult to substantiate.

Detection and Survey Results

During the month of August, work was continued from Rathburn Bay Narrows into the southern section of Jack Lake.

In total, 264 sewage systems were inspected. Of that, 117 systems require no further abatement or corrective action.

An additional 90 sewage systems have been classified as potential concerns because they do not meet or approximate current standards of design, construction, approval and/or location. These are systems which may be polluting,

however, at the time of the survey, there was no evidence to indicate decisively that such a situation exists.

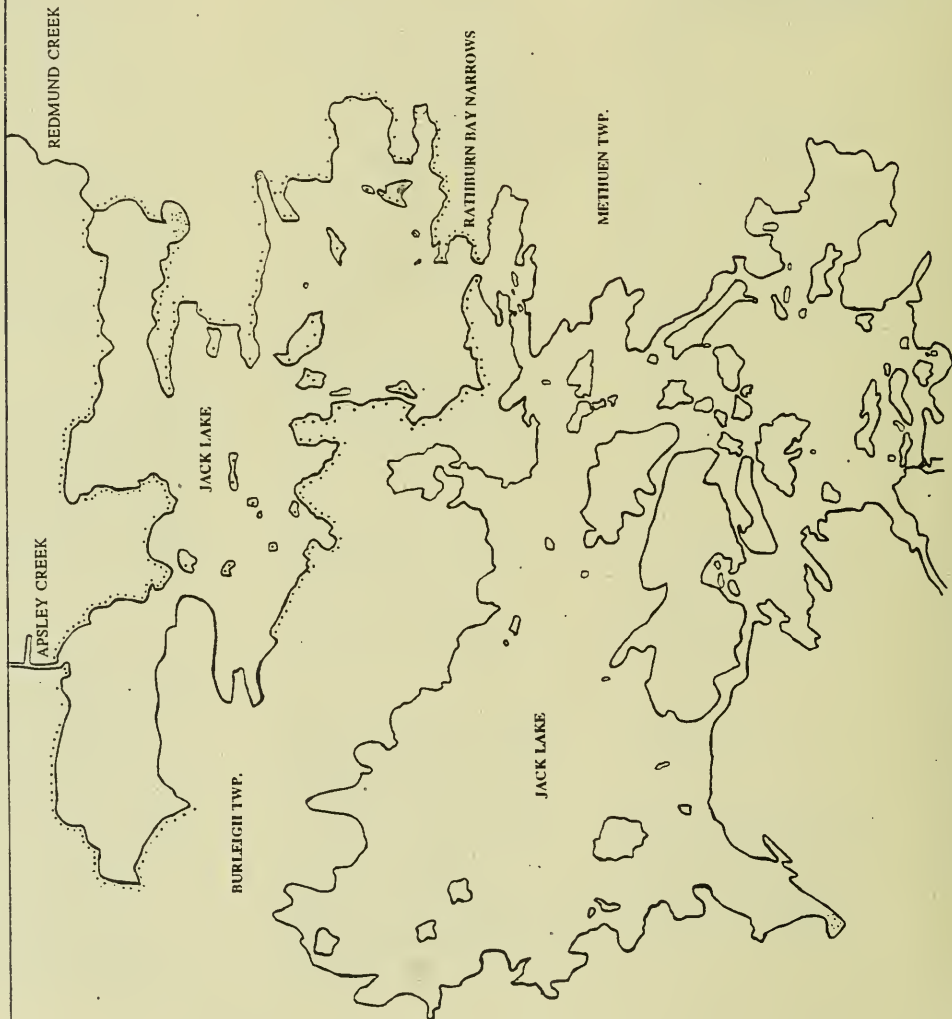
The Peterborough Health Unit has accepted responsibility to contact owners in order to inform them of the potential problems which may result from the systems' continued use. The Health Unit will recommend that such owners upgrade their systems in order to meet current environmental standards.

A remaining 57 sewage systems required further abatement measures to correct sewage system malfunctions.

Summary of Abatement

Correction to those sewage systems requiring abatement will be pursued by the Peterborough Health Unit inspectors until all environmental

and health-related
concerns are resolved.



MINISTRY OF THE ENVIRONMENT	
JACK LAKE	
COTTAGE POLLUTION CONTROL PROGRAM	
SCALE	NOT TO SCALE
DRAWN BY	M.S.S.
CHECKED BY	T.H.
DATE	DEC. 1993
DRAWING NO.	

PREVIOUS YEAR'S SURVEY ABATEMENT PROGRESS

Each year as the Cottage Pollution Control Program draws to a seasonal close, a number of substandard sewage systems remain uncorrected.

For numerous reasons, such as not being able to locate an owner or difficulty in choosing a new sewage system location, cottage sewage problems are left to the next year to be corrected. Occasionally, some of these problems may take more than one year to resolve.

These records are reviewed and compiled each year and Environmental Officers are assigned files with the directive to ensure that corrective action is undertaken to resolve sewage problems.

In some cases, Abatement Officers will be compelled to pursue legal action to force reluctant or defiant owners to act in the public interest.

Generally, this does not occur until reasonable paths of persuasion have been pursued.

At the beginning of 1993, there were approximately 366 outstanding cottage files requiring abatement on 18 lakes. During the course of the summer and on into the fall, 290 of those 366 cottage sewage problems were corrected.

Written agreements have been signed by the majority of remaining cottage owners to complete remedial measures by the spring of 1994.

Legal action is being initiated against the few remaining owners who have refused to respond to attempts by Environmental Officers to complete remedial measures.

CONCLUSIONS

The Ministry of Environment and Energy through the Cottage Pollution Control Program is making every effort to ensure that Ontario waters are healthy, safe and environmentally secure.

systems will continue to be a major objective of the Cottage Pollution Control Program.

During the 1993 inspection season, 484 principal establishment sewage systems were inspected. Out of that total, 207 (42.8%) sewage systems were found to meet present regulatory requirements while 161 (33.2%) sewage systems were found to exhibit some potential concern. There were also 116 (24.0%) sewage systems which were found to be malfunctioning. These malfunctioning systems will require abatement action to bring them into compliance. To date, 47 (41%) of the 116 malfunctioning sewage systems have been corrected.

Abatement of malfunctioning and substandard sewage

LAKES SURVEYED

Muskoka - Haliburton - Simcoe

YEAR OF SURVEY	LAKE	NUMBER OF SYSTEMS INSPECTED
1970	Sparrow	302
1971	Muskoka (Muskoka Bay)	270
1971	Leonard	112
1974	Bass (Ryde)	23
1974	Clear (Wood)	155
1974	Harp	78
1974	Kahshe	481
1974	Twelve Mile Lake	168
1974	Wood	205
1975	Muskoka (Bala Bay)	280
1975	Dark	38
1975	Gull (Muskoka)	138
1975	Gull (Haliburton)	413
1975	Silver	37
1975	Three Mile	542
1976	Joseph (Ames Point)	25
1976	Muskoka (Sandy Bay)	17
1976	Dickie	121
1976	Go Home Bay	119
1976	Loon	175
1976	Muldrew	378
1976	Ril	140
1976	Turtle	63
1977	Honey Harbour (South Bay)	834
1977	Muskoka (Milford Bay)	292
1977	Paudash (Haliburton)	364
1977	Joseph (Woodroffe Bay)	44
1978	Honey Harbour (North Bay)	476
1978	Severn River	833
1978	Indian River	67
1979	Esson	117
1979	Kashagawigamog (North Half)	533

YEAR OF SURVEY	LAKE	NUMBER OF SYSTEMS INSPECTED
1979	Muskoka	463
1979	Miskwabi	78
1979	Nine Mile	138
1980	Black Lake	57
1980	Kashagawigamog (South Half)	273
1980	Muskoka	175
1980	Soyer's	142
1980	Stewart	97
1981	Morrison	175
1981	Muskoka (Broadley Point)	239
1981	Salerno	165
1981	Sunny	56
1982	Boshkung	348
1982	Lake of Bays (Narrows)	127
1982	Muskoka (East Bay, Kettles)	227
1982	St. George	105
1982	Little Dudman	69
1982	Long	88
1982	Negaunee	15
1983	Clement	35
1983	Haliburton (South Bay)	124
1983	Lake of Bays (Narrows cont'd)	138
1983	Long (Muskoka)	110
1983	Muskoka (Dudley Bay)	132
1983	Oxbow	134
1983	Waseosa	139
1983	Young	67
1984	Lake of Bays	187
1984	Twelve Mile	249
1984	Little Boshkung	81
1985	Lake Muskoka (Browning Island)	119
1985	Lake of Bays	260
1985	Horseshoe	289
1985	Lower Paudash	256
1986	Hall's Lake	275
1986	Lake of Bays	195
1986	Mountain	260
1986	Six Mile (Year 1)	153
1987	Big Hawk	164
1987	Community of Dorset	148

YEAR OF SURVEY	LAKE	NUMBER OF SYSTEMS INSPECTED
1987	Leech	121
1987	Little Hawk	131
1987	Raven	155
1987	Six Mile (Year 2)	252
1987	Wolf	78
1988	Brady	73
1988	Koshlong	258
1988	Peninsula	366
1988	Six Mile (Year 3)	376
1989	Canning	286
1989	Kushog	544
1989	Lake of Bays	282
1989	Menominee	96
1990	Severn Sound (Simcoe)	530
1990	Severn Sound (Muskoka)	428
1991	Severn Sound (Penetang)	473
1991	Muskoka Bay	297
1991	Kahshe	218
1991	Eagle	159
1991	Moose	36
1991	Harp	91
1992	Honey Harbour	290
1992	Little Lake	271
1992	Kahshe Lake	275
1992	Jack Lake (Peterborough)	270 + (185 sub-establishments)
1993	South Lake	102
1993	Davis Lake	118
1993	Jack Lake	264
	TOTAL	21,232

* *Sub-establishments are not included in the total number of systems inspected.*

1993 COTTAGE POLLUTION CONTROL PROGRAM SUMMARY

1993 CPCP Survey	CLASS A	CLASS B	CLASS C	CLASS D	TOTAL
SOUTH LAKE	45	34	23	0	102
DAVIS LAKE	45	37	36	0	118
JACK LAKE	117	90	52	5	264
TOTAL	207	161	111	5	484

1. Ontario Ministry of the Environment, Pollution Control Branch, Characteristics of grey water and black (toilet) waste water from the same house, 1977) paper prepared by M. Brandes, Ph.D., P.Eng., June 1977.



